

Mansoura University Faculty of Engineering Textile Department	Jan 2013 First Term Exam Time : 3 hr	1 st year Exam Cotton yarn manufacturing Code no. : 6113
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Answer the following questions:

Question no. 1 :

Draw a diagrammatic sketch for :

- 1.1) Ginning operation
- 1.2) Spinning mill for producing ring spun yarn and open end yarns
- 1.3) Some machines used for opening , coarse cleaning , blending , fine cleaning and intensive cleaning ^{or} opening
- 1.4) Blow room lines for processing the following materials :
Cotton with trash content < 3% , 3% to 6% , 6% , waste fibers , man-made fibers and cotton /polyester fibers blends.
- 1.5) Carding machine elements, basic operation sectors, flow of material, direction of rotation of main elements , positions of carding and stripping action.
- 1.6) Construction and modification at feeding zone and opening zone of carding machines
- 1.7) Design and parameters of card clothing " flexible, semi-rigid and metallic clothing
- 1.8) Construction of drafting arrangement on drawing frame.

Question no. 2 :

Discuss in details the following:

- 2.1) Principles of opening cotton tufts and opening devices.
- 2.2) The possibilities of cleaning operation
- 2.3) The effect of throughput in kg/hr, m/c passage and type of machines on the degree of opening at blow room
- 2.4) The effect of cotton grades, trash content and number of cleaner on cleaning efficiency
- 2.5) Relationship between both of machine factor , cotton cleanability and degree of cleaning (efficiency%)
- 2.6) Main tasks of carding and drawing process
- 2.7) Factors affect fiber transfer between carding m/c elements
- 2.8) Causes of web faults, higher %age of waste and higher C.V% card sliver at carding m/c
- 2.9) The object of carding segment
- 2.10) Controlling the degree of fiber deterioration at opening point (taker-in)
- 2.11) Behavior of fibers in the drafting zone "fiber guidance, floating fibers and fiber friction field" on drawing frame
- 2.12) Drafting force and stick slip on drawing frame
- 2.13) Distribution of draft and effect of draft on drawing frame

Q#3

- a. What are the main objectives of both combing and combing preparation?
- b. With a neat sketch explain the passage of material through the Ribbon lap machine.
- c. Explain the application of Hook theory to decide the number of passages required for comber lap preparation.
- d. Briefly explain the different degrees of combing.
- e. Explain combing cycle.
- f. If 24 card cans having 0.15 hank sliver are fed to the a sliver lap machine , what will be the count of produced sliver lap if drat is 2.
- g. If the fed lap to 6 – head combing machine is 55 g/m, fed length is 5mm, comber speed 220 cycle/min, noil percent is 18% and machine efficiency is 88% . Calculate comber production.

Q#4

- a. Give a neat sketch to show the passage of material in roving frame and explain
- b. how the objectives of roving frame are fulfilled .
- c. Explain each of the following: i. Flyer leading ii. Bobbin leading .
- d. A roving frame working at 82% efficiency. If roving hank is 2.0, diameter and speed of the front roller are $1\frac{1}{2}$ inch and 170 rpm respectively. Calculate the production of the roving frame if number of units is 96.

Q#5

- a. Explain with illustration flow of material in both ring spinning rotor spinning machine.
- b. Discuss each of the following:
 - i. Ring coating
 - ii. Traveller material.
 - iii. Factors Considered for Selection of a traveler
- c. What is meant by the following Specification of a traveller : 5/0 MS/FF
- d. Make a comparison between rotor and ring Spun yarn properties.
- e. In ring spinning machine, ring diameter is 42 mm, spindle speed 13000 rpm, yarn count Ne 60, twist factor \sqrt{m} 130, Number of spindles = 440 and machine efficiency is 90% . Calculate:
 - i. traveller speed (m/sec) at bobbin diameter 36mm.
 - ii. Machine production (kg/hr)
 - iii. ring spinning machine draft, if contraction due to twist is 3% and hank of roving fed is $2.5N_e$.